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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/471,920	12/23/1999	KAMERAN AZADET	10-2	8106

7590 03/03/2004

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EXAMINER

PHU, PHUONG M

ART UNIT	PAPER NUMBER
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2631

DATE MAILED: 03/03/2004

17

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/471,920

Applicant(s)

AZADET ET AL.

Examiner

Phuong Phu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 January 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-38 and 47-59 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 13-23, 38, 50-55 and 59 is/are allowed.
- 6) ☒ Claim(s) 1, 3, 5-12, 24, 31-37, 47-49 and 56-58 is/are rejected.
- 7) ☒ Claim(s) 2, 4 and 25-30 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This Office Action is responsive to the Amendment filed on 1/29/04.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

3. Claims 1, 3, 5-12 and 47-49 are rejected under 35 U.S.C. 102(e) as being anticipated by Zhong et al (5,970,104), prior art of record.

As per claims 1 and 47, see figure 1 and col. 2, line 22 to col. 3, line 20, Zhong et al discloses a method and associated system wherein the method/system comprises:

step/means (120) for pre-computing branch metrics for received sequences of symbols (106);

step/means (120, 112) for selecting one of said pre-computed branch metrics based on a decision from a state signal (121); and

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step/means (114, 123) for selecting a path having a best path metric for a given state.

As per claim 3, Zhong et al discloses that said path metric is an accumulation of said corresponding metrics overtime (see figures 2, 4 and 5, and col. 3, line 14 to col. 4, line 28 and col. 6, line 44 to col. 7, line 35).

As per claim 5, in Zhong et al, said best path metric is inherently a path metric.

As per claims 6-10, in Zhong et al, said method/system inherently utilizes a technique or an algorithm.

As per claim 11, Zhong et al discloses that said decision from a corresponding state signal (121) is symbol signal (b2, b1) (see figure 3B).

As per claim 12, Zhong et al discloses that said decision is an added-compare-select decision (see figure 1).

As per claims 48 and 49, Zhong et al discloses that said decision is taken from a unit (114) (see figure 1).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 24, 31-37 and 56-58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhong et al.

As per claims 24 and 56, as applied above for claims 1 and 47, Zhong et al discloses a method and associated system as claimed, wherein the pre-computing branch metrics step/means

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(120) receives input signals from channels I and Q; except that the received signal is pre-filtered before being inputted to step/means (120). However, using a filter for filtering noise and/or interference from received signal is well-known in the art, and the examiner takes Official Notice. It would have been obvious for one skilled in the art when building Zhong et al to implement a filter to filter noise and/or interference (if occurred) from received signals from channels I and Q before step/means (120) so that these noise and/or interference would not affect the performance of step/means (120). With the implementation of such a filter in Zhong et al, the memory, or namely, content of the channels, conveyed in the received signals are inherently shortened.

Claims 31-35 are rejected with the same reason set forth for claims 6-10.

Claim 36 is rejected with the same reason set forth for claim 11.

Claim 37 is rejected with the same reason set forth for claim 12.

Claim 57 is rejected with the same reason set forth for claims 48 and 49.

Claim 58 is rejected with the same reason set forth for claim 12.

Allowable Subject Matter

6. Claims 13-23, 38, 50-55 and 59 are allowed.

7. Claims 2, 4 and 25-30 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

8. Applicant's arguments filed on 1/29/04 have been fully considered but they are not persuasive.

The applicant mainly argues that (i) regarding to claims 18, 38 and 59, Zhong et al does not disclose, in combinations, steps of “precomputing one-dimensional branch metrics for each dimension of the multi-dimensional signal for speculative sequences of one or more channel symbols, and combining said one-dimensional branch metrics into at least two-dimensional branch metrics”; (ii) Zhong et al does not disclose the precomputation of branch metrics for speculative sequences of channel symbols in a fashion of ahead-of-time, as claimed in claims 1, 24, 47 and 56; and (iii) Zhong et al does not disclose that the state signal (121) is a decision, and this state signal is not a survivor symbol, and that decisions from corresponding states are used to select the branch metrics, as claimed in claims 1, 24, 47 and 56.

Regarding to part (i), the applicant’s argument is render moot. The rejections to the claims are now withdrawn.

Regarding to part (ii), the examiner respectfully disagrees. Note that the rejections to the claimed based on the limitation given in the claims. With respect to claims 1, 24, 47 and 56, see figure 1, Zhong et al does disclose the precomputation of branch metrics for speculative sequences of channel symbols in a fashion of ahead-of-time, as claimed, wherein Zhong et al discloses step/means (120) for pre-computing branch metrics for received sequences of symbols (106) in such a way step/means (120) is performed **prior to** the selection of the SELECTED BRANCH METRICS (116) (see also col. 2, line 63 to col. 3, line 20).

Regarding to part (iii), the examiner also disagrees. Zhong et al discloses that at a particular time, the state signal (121) is corresponding to a state from the ADD/COMPARE/SELECT (114), and is used to decide which branch indices are outputted from the BRANCH INDEX GENERATOR (112), which in turn are used to select the branch metrics

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SELECTED BRANCH METRICS (116) (see the ABSTRACT). Further, Zhong et al state signal (121) is inherently a symbol signal. Note that the limitation “a survival symbol”, recited in claims, 11 and 36, is given an inventive weight as a symbol signal, as disclosed by Zhong et al state signal (121) since the claims do not have other limitations to make the limitation “a survival symbol” distinguishable from Zhong et al state signal (121).

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phuong Phu whose telephone number is 703-308-0158. The examiner can normally be reached on M-F (8:30-6:00) First Monday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on 703-306-3034. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Phuong Phu

Phuong Phu

3/2/04

Phuong Phu
Primary Examiner
Art Unit 2631

**PHOUNG PHU
PRIMARY EXAMINER**